HOW DO LEVEL OF EXPERIENCE, PURPOSE FOR RIDING AND PREFERENCE FOR FACILITIES AFFECT LOCATION OF RIDING? A STUDY OF ADULT BICYCLE RIDERS IN QUEENSLAND, AUSTRALIA

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ABSTRACT

Road infrastructure characteristics affect both the popularity of bicycling and its safety but comparisons of the safety performance of various types of infrastructure may be confounded by differences in the profiles of cyclists who use them. Data from a survey of 2,532 adult bicycle riders in Queensland, Australia demonstrate that many riders ride reluctantly in particular locations, and that preference for riding location is influenced by degree of experience and riding purpose. Most riders rode most often and furthest per week on urban roads, but about a third of all riders (and more new riders) rode there reluctantly. Almost two-thirds of riders rode on bicycle paths, most by choice, not reluctantly. New riders rode proportionally more on bicycle paths, but continuing riders rode further in absolute terms. Utilitarian riders were more likely to ride on bicycle paths than social and fitness riders and almost all of this riding was by choice. Fitness riders were more reluctant in their use of bicycle paths, but still most of their use was by choice. A third of the respondents reported riding on the sidewalk (legal in Queensland), with about two-thirds doing so reluctantly. The frequency and particularly distance ridden on the sidewalk was less than for urban roads and bicycle paths. Sidewalks and bicycle paths are important facilities for both inexperienced and experienced riders and for utilitarian riding, especially when urban roads are considered a poor choice for cycling.

INTRODUCTION

Road infrastructure characteristics affect both the popularity of bicycling (*1, 2*) and its safety (*3*). A recent review (*3*) concluded that clearly-marked, bicycle-specific facilities (including cycle tracks at roundabouts, bike routes, bike lanes and bike paths) were safer than on-road cycling with traffic or off-road with pedestrians and other users. Police-reported bicycle crashes on rural roads are three times more likely to result in a fatality (*4*) because of the higher average vehicle speeds and lack of sidewalks.

The majority of research into infrastructure for cycling has focused on cycling as a mode of transport and how improvements in infrastructure can increase the mode share of cycling. Research has examined factors affecting the choice to commute by bicycle, as well as the characteristics of individuals who currently commute to work. This research has found that the majority of commuters are male (*5, 6*) and that average one-way trip lengths range from 3.3 km (*7*) to 12 km (*8*), with an average speed of 23.5 km/hr. There is a strong preference for a smooth riding surface and a strong dislike of discontinuous bicycle facilities, and cyclists tend to avoid routes with traffic controls and major intersections (*9*). Despite research that shows terrain has a major impact on discouraging non-commuters from cycling, those currently riding have a preference for moderately hilly terrain (*9*).

Route choice appears to be influenced by both minimum distance or travel time and perceived safety or comfort. Observational studies have shown that cyclists take routes that are longer than the shortest paths to ride on facilities with bicycle infrastructure or low traffic streets (*10*). In a stated preference survey, Stinson and Bhat (*9*) found that while minimising travel time was a more important factor than facility type, their respondents preferred routes with a low-volume of motorised traffic, and without on-street parking facilities. They preferred to travel on designated bicycle routes, with on-road facilities rather than separate paths. A later adaptive stated preference survey (*11*) concluded that for a trip with the shortest possible time of 20 minutes on a road with no bike lane and on-street parking, the average respondent was willing to ride 5.1 longer to use an off-road facility, 16.4 minutes more for a bike lane and 9.3 minutes for no parking on the road.

Rider characteristics also influence route choice. Several studies have concluded that women choose safer facilities than men. An observational study in Melbourne, Australia, found that female commuters were more likely to use off-road paths than on-road lanes or lanes with no bicycle facilities (*6*), which is consistent with a GPS study from Portland that found women were more likely to ride on low traffic streets and bicycle boulevards, and rode less on busier streets with bike lanes (*10*). The adaptive stated preference study cited earlier found a trend for women to be willing to spend more time to ride on safer facilities, but this was not statistically significant (*11*).

Degree of experience appears to affect route choice. More experienced commuters appear to be more sensitive to travel time, while inexperienced commuters place a greater importance on avoiding motor vehicle traffic (*10*). Inexperienced commuters place a higher value on a separate path or bicycle lane than experienced commuters. There is also a stronger preference for flatter terrain by inexperienced riders, with experienced riders stating a greater preference for moderately hilly terrain. Experienced commuter cyclists dislike routes with a high number of traffic lights (*12*).

Researchers suggest that this does not stem from a lack of confidence in interacting with traffic, but rather the inconvenience of stopping which significant increases the amount of effort the rider must exert (*13*).

Cycling is a form of sustainable transport, but it is also a leisure activity and a participation sport. There is scant research investigating the different characteristics and infrastructure preferences of the various types of cyclists. Do leisure cyclists prefer different facilities compared with commuter or utilitarian cyclists? What about people participating in cycling as a sport?

Some initial research among serious leisure cyclists in Australia (*14*) examined the perceptions of these cyclists of sharing the road with motorists. While leisure cyclists acknowledged safety concerns, these concerns did not appear to present a major barrier to cycling. Within this cohort, concerns over traffic safety decreased as experience increased. Possibly differing from commuters, leisure cyclists frequently sought the safety of travelling in groups, as well as other strategies to cope with vehicle interactions (*12*).

Off-road cycling is both popular and a significant contributor to bicycle-related trauma. In Australia, off-road riding contributes almost half of the hospitalisations as a result of bicycle crashes (*15*). Interviews with hospitalised riders in Western Australia found that the majority (58%) of injuries occurred off-road, on sidewalks, driveways, yards, cycle paths, car parks and bike trails (*16*). Yet little is known about the factors affecting the safety of off-road riding. The recent review of infrastructure effects on safety (*3*) specifically excluded "studies of injuries or crashes that occurred when the bicycle was being used for bicycle racing, 'off-road mountain-biking', trick/trials riding, or play".

The route choices of mountain bike riders appear to be influenced by degree of rider experience. Research from New Zealand (*17*) indicates that less experienced riders prefer easier uphill sections, smooth and open track surfaces, few track obstructions, and gentle downhill sections. Their focus appears to be on relaxation and easy riding. However experienced riders enjoy racing and prefer routes that offered a physical or technical challenge, including narrow single tracks and technical track surfaces with fast downhill sections. For experienced riders, an element of speed, excitement or risk is more important.

As has been pointed out in the literature, comparisons of the safety performance of different types of infrastructure may be confounded by differences in the gender or age profiles of cyclists who use these types of infrastructure or different levels of skill or risk-taking behaviour (*3*). This paper examines the extent to which choice of facility (urban road, sidewalk etc) is associated with rider experience, purpose for riding, and preference for type of facility among a sample of Queensland riders.

METHOD

Setting

This research was conducted in the State of Queensland, Australia. Queensland has about 4.5 million inhabitants, of which 2 million live in the capital city, Brisbane (*18*). The climate varies from sub-tropical to tropical, allowing year round riding. Random population surveys have estimated that about 50% of adults in Queensland ride a bicycle at least once a month (*19, 20*). In the 2006 Census, 1.1% of Brisbane residents

travelled to work by bicycle (*21*), a figure comparable to that for Canada but higher than for the United States (*22*). Cyclists comprise about 3% of road fatalities (*23*), about 15% of hospital admissions from on-road crashes and about 31% of hospital admissions (*15*) resulting from off-road crashes in Queensland. Brisbane has approximately 400 kms of off-road bike paths and 520 kms of on-road bike lanes (see http://www.brisbane.qld.gov.au/traffic-transport/cycling/bikeway-maps/index.htm). Some other large Queensland cities also have bicycle-specific infrastructure, but there is little provision for bicycles outside these areas. Queensland is the only state or territory in Australia where it is legal for adults to ride a bicycle on the sidewalk. In other Australian jurisdictions, this is prohibited except when the adult is accompanying a child of 12 years of age or younger. This prohibition was based on concerns about pedestrian safety, although there is no evidence available on the number of pedestrians injured by bicycles on sidewalks.

Survey Development and Recruitment

The information reported here was collected as part of a larger survey of the riding patterns, safety behaviours, riding patterns, risk perception and injury experiences of Queensland cyclists. The project received ethics approval from the Queensland University of Technology Human Research Ethics Committee. The survey questions were based on national and international sources (*24-26*). The survey was launched in October 2009 and closed at the end of March 2010. Participants were recruited through advertising, media coverage, attendance at mass participation events and word of mouth. There were ten radio and newspaper articles regarding the survey in October 2009 and 12 further mentions in January-February 2010, including an article in the magazine of the largest motoring organisation which reaches about half of the Queensland population. The survey was also posted on several online Queensland-based cycling forums (roadgrime.com.au; mtbdirt.com.au; fixed.org.au), and distributed via word of mouth (including to Bicycle Queensland, several Bicycle User Groups, bicycle shops/groups, Queensland Local Government Network). The research team also distributed promotional flyers and cards.

The survey was available online, or a hard copy was available on request. The questionnaire package (both online and hardcopy) included a cover letter and the questionnaire, and the hardcopy also included a reply-paid envelope. Participation in the survey was voluntary. Participants who provided contact details to the research team were entered into a monthly prize draw for cycling accessories (jerseys, reflective anklets and light sets).

Participants were required to be Queensland residents, and to have ridden a bicycle in the past 12 months. The ethics approval required that participants were 18 years or older, although parents or guardians were able to complete surveys on behalf of minors.

Relevant Items and Coding

Participants were asked “In a normal week, what proportion of your cycling is for the following reasons?” The options provided were: shopping, travel as a student to school/TAFE/university, commuting, travel to public transport, social/recreation, health/fitness and training, and organised racing. For each option, the participant marked a scale from 1 “very little or none” to 7 “most or all”. If shopping, travel as a student, commuting or travel to public transport was rated highest, the respondent was

categorised as a utilitarian rider. If social/recreation was rated highest, the respondent was categorised as a social rider. If health/fitness and training, or organised racing was rated highest, the respondent was categorised as a fitness rider. In the case of ties between commuting and health/fitness, the respondent was categorised as a utilitarian rider because it was assumed that the trip to work was the major influence on where riding occurred and that health/fitness was a side benefit. In the case of ties between health/fitness and training and racing, the rider was categorised as a fitness rider. This differs somewhat from the approach taken in earlier research (*27*) where utilitarian travel was defined based on the destination of individual trips.

To measure rider experience, participants were asked to indicate in which of the previous five years (2005-2009) they were regular riders. Those reporting riding regularly in only 2008 and/or 2009 were classified as "new" riders. Riders who had ridden in all five years (2005-2009) were classified as "continuing" riders. Respondents who had ridden any other combinations of years were classified as "other". Regular riding was not defined in the question, but later analyses showed that about 85% of respondents rode two or more days in an average week.

Infrastructure choice was measured by asking participants where they usually ride. The options provided were footpath (sidewalk), bicycle path, urban roads, rural roads, velodrome, BMX track, skate park, off-road/dirt (single track, fire trails, unsealed roads) and other. For each option, they were asked to select whether "I choose to ride here", "I ride here reluctantly", or "I do not ride here". They were also asked how many days per week and the distance per week they usually ride in that location.

The facilities that are available for use by riders are likely to vary according to whether they ride in the city or in rural or remote locations. For this reason, the Rural, Remote and Metropolitan Areas (RRMA) classification system was used to classify the postcodes of residence of the respondents (*28*). There are seven RRMA categories based on population: two for metropolitan zones, three for rural zones and two for remote zones.

RESULTS

Characteristics of Respondents

A total of 2,630 online survey responses were received of which 2,543 were complete. Data from the 28 respondents aged 6-17 were excluded from further analysis. An additional 17 hard-copy survey responses were valid and complete. Thus, the total sample size was 2,532.

The respondents comprised 20.6% new riders, 53.4% continuing riders and 26.0% other riders (Table 1). Most riders were aged 30-59 but new riders were somewhat younger than continuing and other riders, with a larger proportion of new riders being in the 18-29 year age group. New riders were also more likely to be female than continuing or other riders and rode fewer kilometres per week than continuing or other riders. New riders were more likely to ride for utilitarian purposes and less likely to ride for fitness than other riders. There was no difference in the pattern of urban or rural residence among the groups, with about two-thirds living in Brisbane, the capital city. The characteristics of the other riders were intermediate between new and continuing riders.

In terms of main purpose of riding, 37.2% of respondents were utilitarian riders, 15.6% were social riders and 47.0% were fitness riders. Table 2 shows that utilitarian riders were less likely to be aged 60 and over and more likely to be capital city residents. Social riders were less likely to be 30-59 years old, and more likely to be female (although males still comprised the majority of the group). Fitness riders rode almost twice as far per week, were more likely to be continuing riders and were somewhat more likely to live in "Other Rural" areas of Queensland.

Riding Locations

As shown in Table 3, most respondents reported riding on urban roads (92.6%) and bicycle paths (65.7%). About a third reported riding on rural roads (37.0%), velodromes (36.8%) and sidewalks (33.9%). Just over a quarter reported riding on off-road or dirt tracks (28.0%). The means and medians of days and kilometres ridden per week were similar, so only means are reported. Respondents rode most frequently on urban roads (3.89 days per week), followed by bicycle paths (3.25 days per week). While relatively fewer respondents rode on rural roads, the mean distance travelled per week was almost as high on rural roads as on urban roads (89.07 kms per week versus 96.93 kms per week). This may reflect the higher representation of fitness riders (whose distance travelled per week is highest) who live in other rural areas.

Respondents indicated whether they choose to ride in a location or whether they ride there reluctantly. Interestingly, while more than a third of riders said that they ride on the sidewalk, for about two-thirds they ride there reluctantly. About a third of riders who ride on urban roads also report doing so reluctantly. In contrast, most of the riding in other locations occurs by choice.

Effect of Riding Experience on Riding Location

There were small differences in riding location and choice according to rider experience. New riders were more likely to ride on the sidewalk than continuing or other riders (see Table 4). Similar proportions of new, continuing and other riders rode on bicycle paths, although continuing riders were more often reluctant to do so. Level of experience appeared to have little effect on the percentage who rode on urban roads, but more of the use by new and other riders was reluctant. New riders were less likely to ride on rural roads than continuing or other riders and this pattern appeared to reflect choice rather than reluctant riding.

A larger proportion of the distance ridden by new riders was on sidewalks (6.5%) than for continuing (3.9%) or other (4.5%) riders (see Table 5). A similar pattern was found for bicycle paths (29.8% versus 25.5% and 21.7%). New riders rode relatively less on rural roads (10.5% versus 15.3% and 13.9%). In terms of the mean distance travelled per week, continuing riders actually rode further on sidewalks (3.73 kms) than new riders (3.22 kms) or other riders (3.10 kms). New and continuing riders rode a similar distance per week on bicycle paths (25.35 kms and 25.46 kms). New riders rode relatively less distance per week on urban roads, rural roads and off-road trails than continuing riders.

Effect of Purpose of Riding on Riding Location

The analysis of riding location and choice demonstrated some strong differences according to riding purpose. Utilitarian riders were the most likely to ride on the sidewalk, followed by social and then fitness riders (see Table 6). Utilitarian riders

were the most likely to ride on bicycle paths, followed by social and then fitness riders. Most of the riding on bicycle paths was by choice, although somewhat more of the riding on bicycle paths by fitness riders was reluctant. Similar proportions of utilitarian, social and fitness riders rode on urban roads, although the motivations for doing so differed somewhat. More of the riding on urban roads by utilitarian riders was reluctant. Utilitarian riders were less likely to ride on rural roads than social or fitness riders and this pattern appeared to reflect choice rather than reluctant riding.

DISCUSSION

The survey results demonstrate that many riders ride reluctantly in particular locations, and that preference for riding location is influenced by degree of experience and riding purpose. Most riders rode most often and furthest per week on urban roads, regardless of rider experience or purpose of riding. However, about a third of the riders on urban roads were riding there reluctantly. New and continuing riders were equally likely to ride on urban roads, but more new riders rode there reluctantly. This is consistent with findings from other studies that both current riders and non-riders report that vehicular traffic prevents or discourages riding (e.g. *29*) and underlines the need to improve the level of safety or amenity for riders on urban roads.

Almost two-thirds of riders rode on bicycle paths and this was by choice, not reluctantly, for most of these riders. While respondents were not specifically asked, this may be at least partly a consequence of their reluctance to ride on urban roads. The percentage of total distance ridden that was on bicycle paths was greatest for new riders, but the mean distance ridden on bicycle paths was similar for new and continuing riders because of the greater distance ridden per week by continuing riders. Thus, bicycle paths appear to be an important facility for riders of all levels of experience. Utilitarian riders were more likely to ride on bicycle paths than social and fitness riders and almost all of this riding was by choice. Fitness riders were somewhat more likely to be reluctant in their use of bicycle paths, but still most of their use was by choice.

A third of the respondents reported riding on the sidewalk, with about two-thirds of them doing so reluctantly. New riders and utilitarian riders rode more on the sidewalk. The frequency, and particularly distance ridden, on the sidewalk was less than for urban roads and bicycle paths, suggesting that the sidewalk was used in locations where the urban road was considered unsafe or inconvenient (e.g. one-way streets), rather than being used for the entire trip. It was not surprising that new riders spent a larger proportion of their riding on sidewalks than more experienced riders, but the interesting finding was that the mean distance ridden on sidewalks per week was greater for experienced riders. This shows that, like bicycle paths, sidewalks are an important facility for riders of all levels of experience.

It was surprising that there was less reluctance to ride on rural roads than urban roads, given the poor level of safety of rural roads for bicyclists (*4)*. The extent to which riders reported riding off-road and on dirt tracks was also unexpected, particularly since this appeared to be by choice, rather than reluctantly. Further analysis of the data will examine whether this is related to types of bicycles owned (e.g. mountain bikes).

In addition to providing information about use of various types of infrastructure, the results give some understanding of the characteristics of the new

riders who are contributing to the growth of cycling. The approach of classifying respondents who had ridden regularly only in 2008 and 2009 as new riders and classifying those who had ridden regularly in all of the previous five years as continuing riders appeared to be a reasonable indicator of riding experience. There were systematic differences between new and continuing riders, with other riders being intermediate, which supports this approach. The characteristics of the new riders suggest that the recent increase in cycling in Queensland has been quite widespread, both in age profile and in geographical area. It appears to have occurred all across the State, not just in Brisbane where there has been significant expenditure on improving cyclist infrastructure. New riders are more likely to be riding for utilitarian purposes compared to continuing riders, which suggests that the increase in cycling is serving a transport function, rather than being merely a fashion.

A strength of the study is the high proportion of male participants (73%), which matches the representation of males in cycling in Australia. However, there are a number of limitations relating to the characteristics of participants, where the research was conducted and the way in which data items were presented and analysed.

Compared with population representative samples collected in Queensland, the survey respondents rode more often and longer than other cyclists (*20, 21*). Thus they may not be reflective of the general cycling population. It may be beneficial for future research to actively target areas used for recreational cycling (suburban parks and bikeways), and less specialised bicycle retailers (including department stores) to increase the representation of recreational cyclists in surveys.

The survey specifically excluded riders aged under 18 years. Child cyclists are an important focus for cycling safety research because almost 75% of all injured cyclists presenting to hospital emergency departments in Queensland are under 15 years of age (*30*). It may be that a considerable amount of riding on the sidewalk involves children. Future research is required to examine the riding, safety and injury patterns of child cyclists in Queensland.

Some caution needs to be taken in generalising the results from this survey to other cities and countries. Cyclists can only choose from among the facilities that are available. Compared to other parts of the world, Queensland may have relatively poor facilities on urban roads and some of its bicycle paths provide useful alternatives to urban roads. In addition, the amount of sidewalk riding may be higher in our study because it was conducted in a jurisdiction where this practice is legal for adults.

A significant limitation of the study is the broad categories used to define locations for riding. The current study did not distinguish between roads with bicycle infrastructure (lanes, markings) and those without. Other research (*2, 22, 27*) suggests that the level of usage might be greater and the level of reluctance lower where there is bicycle-specific infrastructure on urban roads. In addition, the current study did not distinguish roads in relation to the role that they play in the road hierarchy (local residential streets, collector roads, urban arterials, highways). The level of use and reluctance may very well vary across the road hierarchy. Later analyses will incorporate speed zone information collected as part of the questionnaire as a proxy indicator of road type. The study also did not distinguish between bicycle paths that are shared with pedestrians and those that are bicycle-only. The majority of bicycle paths in Queensland are shared paths, while past research has concluded that bicycle-only paths are safer (*3*).

CONCLUSIONS

The survey results show that while some types of infrastructure (particular urban roads and sidewalks) may be used by cyclists, it is often reluctantly, rather than by choice. Sidewalks and bicycle paths are important facilities for both inexperienced and experienced riders and for utilitarian riding, especially when urban roads are considered a poor choice for cycling.

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TABLE 1 Characteristics of New, Continuing and Other Riders

	New (n=522)	Continuing (n=1335)	Other (n=659)	Statistical test
Age (%)				
18-29	25.3	7.6	14.0	
30-59	71.1	81.3	80.0	
60-79	3.3	10.9	5.5	X^2 = 0.0132, p<0.01
Gender (%)				
Male	65.3	78.7	69.0	
Female	33.0	20.0	28.7	X^2 = 41.469, p<0.01
Distance ridden per week (kms)				
Mean	115.13	170.16	140.64	F = 50.885, p<0.01
Standard deviation	99.33	113.11	111.10	
Riding purpose (%)				
Utilitarian	42.0	35.4	37.2	
Social	17.4	14.3	16.7	
Fitness	40.6	50.3	46.1	X^2 = 14.964, p<0.01
Residential location (%)				
Capital city	69.3	66.1	68.3	
Other metropolitan centers	7.1	8.1	5.8	
Large rural centers	7.9	9.0	7.6	
Small rural centers	1.7	1.8	1.2	
Other rural areas	11.3	10.3	12.4	
Remote centers	0.8	1.6	1.4	
Other remote areas	0.8	1.0	1.1	X^2 = 10.373, p=0.583

TABLE 2 Characteristics of Utilitarian, Social and Fitness Riders

	Utilitarian (n=944)	Social (n=396)	Fitness (n=1192)	Statistical test
Age (%)				
18-29	13.7	15.4	11.5	
30-59	82.2	72.7	79.2	
60-79	4.0	11.9	9.5	X^2 = 37.23, p<0.01
Gender (%)				
Male	76.0	61.7	77.5	
Female	24.0	38.3	22.5	X^2 = 40.36, p<0.01
Distance ridden per week (kms)	110.03	107.46	196.64	F= 224.434, p<0.01
Mean	83.39	83.08	121.58	
Standard deviation				
Experience (%)				
New	23.4	23.2	17.9	
Continuing	50.5	48.7	56.6	
Other	26.1	28.1	25.6	X^2 = 14.96, p<0.01
Residential location (%)				
Capital city	78.9	60.6	63.2	
Other metropolitan centers	6.1	8.3	8.1	
Large rural centers	7.9	11.7	7.9	
Small rural centers	0.3	3.6	2.1	
Other rural areas	5.0	11.9	16.2	
Remote centers	0.5	2.3	1.8	
Other remote areas	1.2	1.6	0.8	X^2 = 119.43, p<0.01

TABLE 3 Percentage of Riders Who Ride in Particular Locations and Frequency and Distance Ridden and Motivation

Location	% who ride here	% choose to ride here	% ride here reluctantly	Mean days per week	Mean kms per week
Sidewalk	33.9	11.0	22.9	2.67	9.87
Bicycle path	65.7	55.2	10.5	3.25	37.94
Urban roads	92.6	61.9	29.1	3.89	96.93
Rural roads	37.0	32.9	4.1	2.43	89.07
Velodrome	5.1	4.9	0.2	0.60	16.53
BMX track	1.5	1.3	0.1	0.24	1.20
Skate park	0.9	0.8	0.1	0.14	0.75
Off-road/dirt	28.0	26.7	1.3	1.38	30.93
Other	2.6	2.4	0.2	0.84	32.35

TABLE 4 Percentages of New, Continuing and Other Riders Who Ride in Particular Locations

Location	% who ride here			% who choose to ride			% who ride reluctantly		
	New	Continuing	Other	New	Continuing	Other	New	Continuing	Other
Sidewalk	39.5	32.1	33.1	17.4	9.3	9.3	22.0	22.8	23.8
Bicycle path	68.6	65.2	64.5	61.9	53.1	54.2	6.7	12.1	10.3
Urban roads	89.5	92.8	91.0	54.0	66.8	58.7	35.4	26.0	32.3
Rural roads	26.2	42.4	64.7	22.2	38.0	31.1	4.0	4.4	3.6
Velodrome	3.8	6.7	3.2	3.6	6.4	3.0	0.2	0.2	0.2
BMX track	0.8	1.9	1.1	0.8	1.7	1.1	0.0	0.2	0.0
Skate park	0.2	1.3	0.9	0.2	1.0	0.9	0.0	0.2	0.0
Off-road/dirt	16.7	34.6	24.0	15.3	33.3	22.5	1.5	1.1	22.5
Other	0.8	3.4	2.4	0.6	3.3	2.1	0.2	0.1	0.3

TABLE 5 Percentage of Total Distance Ridden That Occurs in Particular Locations for New, Continuing and Other Riders

Location	% total distance			Mean distance per week (kms)		
	New	Continuing	Other	New	Continuing	Other
Sidewalk	6.46	3.93	4.49	3.22	3.73	3.10
Bicycle path	29.83	19.43	21.65	25.35	25.46	20.40
Urban roads	48.63	52.63	53.94	65.85	99.03	84.21
Rural roads	10.49	15.34	13.85	19.43	34.80	27.19
Off-road/dirt tracks	3.96	6.87	5.35	4.13	10.50	6.58

TABLE 6 Percentages of Utilitarian, Social and Fitness Riders Who Ride in Particular Locations

Location	% who ride here			% who choose to ride			% who ride reluctantly		
	Utilitarian	Social	Fitness	Utilitarian	Social	Fitness	Utilitarian	Social	Fitness
Sidewalk	51.3	37.4	19.0	17.5	13.4	5.0	33.8	24.0	14.0
Bicycle path	78.9	67.2	54.7	72.7	58.8	40.2	6.2	8.3	14.5
Urban roads	94.7	85.9	90.9	55.6	56.3	68.9	39.1	29.5	22.2
Rural roads	20.6	40.7	48.8	16.9	33.6	45.2	3.6	7.1	3.6
Velodrome	1.5	2.3	9.0	1.4	2.0	8.7	0.1	0.3	0.3
BMX track	1.1	2.0	1.6	1.0	2.0	1.4	0.1	0.0	0.2
Skate park	0.6	1.5	1.0	0.6	1.5	0.8	0.0	0.0	0.3
Off-road/ dirt	22.2	35.1	30.3	21.1	33.1	29.1	1.2	2.0	1.2
Other	1.8	1.5	3.5	1.5	1.3	3.5	0.3	0.3	0.0